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Total Number of Pages in This Submission: 10

Application Number	10/620,860
Filing Date	July 15, 2003
First Named Inventor	Antonio S. Cruz-Uribe
Art Unit	1791
Examiner Name	TENTONI, Leo B.
Attorney Docket Number	200309104-1

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
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  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☒ Appeal Communication to Board of Appeals and Interferences
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- ☐ Proprietary Information
- ☐ Status Letter
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1. Certificate of Transmission

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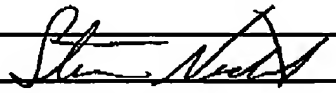
Signature			
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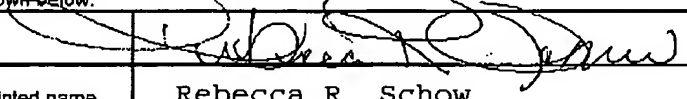
Signature			
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Application No.: 10/620,860 Attorney Docket No.: 200309104-1

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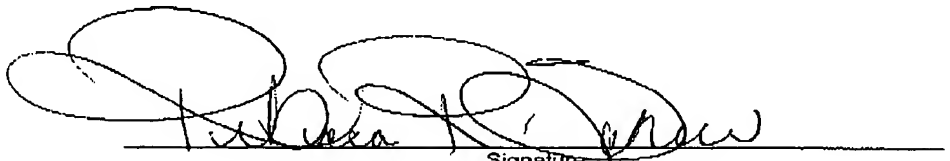

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1. Transmittal Form (1 page)
2. Certificate of Transmission (1 page)
3. Request for Rehearing (8 pages)

200309104-1 10/620,860

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Patent Application of

Antonio S. Cruz-Uribe et al.

Application No. 10/620,860

Filed: July 15, 2003

For: A Method and a System for Producing an Object Using Solid Freeform Fabrication

Group Art Unit: 1732

Examiner: TENTONI, Leo B.

Confirmation No.: 9136

REQUEST FOR REHEARING UNDER 37 C.F.R. § 41.52

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

As provided by 37 C.F.R. § 41.52, Appellant hereby respectfully requested rehearing of the appeal in the above-identified patent application based on the following remarks.

In a Decision issued May 30, 2008 (the "Decision"), the Board of Patent Appeals and Interferences (the "Board") overturned the Examiner's rejections under 35 U.S.C. §102(b) and § 103(a) based on U.S. Patent No. 6,346,986 to Kieronski ("Kieronski") and overturned the rejection of claim 18 under § 102(b) based on DE 19537264 to Greul et al. ("Greul"). Appellant notes that no rejection remains as to claim 18, which presumably now contains allowable subject matter.

The Board Decision, however, sustained the rejection of claims 1-17, 19-26 and 39-42 under § 102 based on Greul and the rejection of claims 27-38 under § 103 based on Greul. For the following reasons, Appellant believes these rejections to be clearly in error and requests reconsideration.

Claim 1 recites:

> A method for producing a three-dimensional object through solid freeform fabrication comprising:
> *selectively depositing containment material* to form a boundary structure, wherein said boundary structure defines a surface of said object; and
> depositing a flowable build material within said boundary structure, wherein said flowable build material forms a portion of said object by flowing to said boundary structure.

(Emphasis added).

Claim 7 recites:

> A method for producing an object through solid freeform fabrication comprising:
> *selectively depositing containment material* to form a boundary structure with a high precision dispenser; and
> depositing a flowable object build material into said boundary structure with a low precision dispenser.

(Emphasis added).

Claim 27 recites:

> A method of producing an object through solid freeform fabrication comprising:

selectively depositing containment material to form a plurality of perimeter structures defining an outer surface of said object with a high precision dispenser (Appellant's specification, paragraph 0028): and

dispensing (410) a volume of fluid build material interior to said perimeter structures (Appellant's specification, paragraph 0031).

(Emphasis added).

Claim 37 recites:

A method of producing a porous object though solid freeform fabrication, said method comprising:

selectively depositing a first material with a high precision dispenser to form an outer boundary structure;

selectively depositing a smaller, internal boundary structure with said high precision dispenser; and

filling said outer boundary structure with a solidifiable build material, wherein said filling is performed by a low precision dispenser.

(Emphasis added).

Claim 39 recites:

A method of creating a three-dimensional object with a liquid build material comprising:

selectively depositing containment material to form a structural boundary, wherein said structural boundary defines a surface of said three-dimensional object;

dispensing a liquid build material into said structural boundary; and

solidifying said liquid build material.

(Emphasis added).

As Appellant has previously argued, Kieronski and Greul both fail to teach or suggest ***selectively*** depositing containment material to form a boundary or perimeter structure with a high precision dispenser as claimed. In this regard, the recent Decision from the Board focuses on whether Greul teaches the claimed use of a "high precision dispenser." (Claim 1).

According to the Decision:

Greul discloses that the hollow mold is freeformingly produced in a rapid prototyping process by means of layered deposition (Greul, 4). Greul discloses that the hollow mold is formed in various layers in the process of freeform molding so that the outermost layers (i.e., the layers that form the functional surface) fulfill the requirements placed on the component (Greul 5). Gruel discloses that the process used to form the three-dimensional object includes either forming a positive or negative mold to form the hollow mold; forming the hollow mold by casting a layer; demolding the hollow mold; attaching the two halves together if the positive mold is

used; placing the hollow mold in tank surrounded by metal powder; and filling the hollow mold with molten material to form the three-dimensional object (Greul 6-7).
(Decision, pp. 6-7).

The Decision goes on to conclude that Greul is teaching a "high precision dispenser" as claimed.

> ... Appellants further indicate that "'high precision dispenser' is meant to be understood broadly as any dispensing equipment configured to perform a high precision process" (Spec. ¶ [0022]).
>
> We note that Appellants have not defined "high precision process." *Webster's* defines "precision" as "exactness, accuracy" *Webster's* defines "high" as "greater in degree than usual." Accordingly, a "high precision process" is reasonably understood as a process performed with a greater degree of accuracy or exactness.
>
> Like the Examiner, we find that Greul's freeform layered deposition process to form the hollow mold constitutes using material dispensers to deposit material in a high precision process. Specifically, the layered deposition of the material to form the hollow mold uses material dispensers to deposit (i.e., cast, Greul 5) the material on a mold. Moreover, the process used is a high precision process in that material is deposited in such a way on the mold that the outermost layer fulfills the requirements placed on this component (i.e., the outermost layer form the functional surface of the finished component) (Greul 5). Greul's disclosure that the outermost layer is *"so thin"* that the properties of the component are not changed and are not determined thereby further indicates that the hollow mold layered deposition s preformed with a higher degree of accuracy than usual (Gruel 5).
>
> We find that whether Greul uses a negative (i.e., the hollow mold is formed as a single piece) or positive mold (i.e., two halves of the hollow ld are formed which are subsequently united), Greul's disclosures indicate that dispensers are used to form the hollow mold with high precision process (i.e., the hollow mold is formed by "selective deposition" s defined by Appellants).

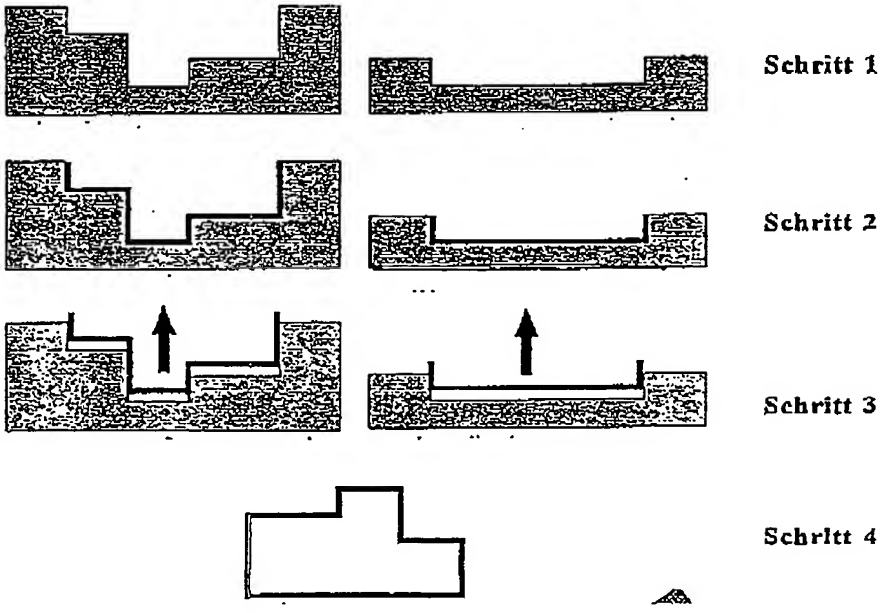
(Decision, pp. 7-8).

Whether or not Greul teaches a "high precision dispenser" or a process using the same, this line of reasoning from the Decision improperly fails to consider whether Greul's process of forming a mold also includes the claimed "*selectively* depositing" of containment material, with emphasis on the term "selectively."

As pointed out previously in Appellant's Brief, "selective deposition methods include using a dispensing mechanism to deposit, *at particular locations*, individual drops of material known as voxels." (Appellant's specification, paragraph 0002) (emphasis added). Thus, consistent with it's ordinary meaning, Appellant expressly uses "selectively depositing" to mean that containment material is deposited "at particular locations" and not others, i.e., *selectively,* not indiscriminately.

The recent Decision fails to address whether Greul teaches the claimed methods including "selectively depositing containment material" as claimed.

As noted above in the quotation from the Decision, Gruel teaches a "layered deposition process to form the hollow mold." (Decision, p. 7). This process is clearly illustrated in the various steps of Fig. 1 of Gruel, some of which are reproduced below. As shown in the figured of Gruel, a form is used to create the desired mold. Then, a layer of material is provided over the form and then hardened to produce the desired mold.



Consequently, there is nothing "selective" about the deposition of the material into the form to produce the desired mold. Rather, a layer of material is indiscriminately provided over the entire interior surface of the form, as shown above, to produce one half of the mold. As noted above, "*selective* deposition methods include using a dispensing mechanism to deposit, *at particular locations*, individual drops of material." (Appellant's specification, paragraph 0002) (emphasis added).

In contrast, Gruel does not teach or suggest any such method that includes "selectively depositing containment material to form a boundary structure, wherein said boundary structure defines a surface of said object" as claimed. Consequently, the Decision in this application erred in sustaining the rejection of independent claims 1, 7 and 39 based on the teachings of Greul. Specifically, the Decision did not address Appellant's arguments that "selectively depositing containment material" requires depositing material only at particular locations and not as a blanket layer as taught by Greul.

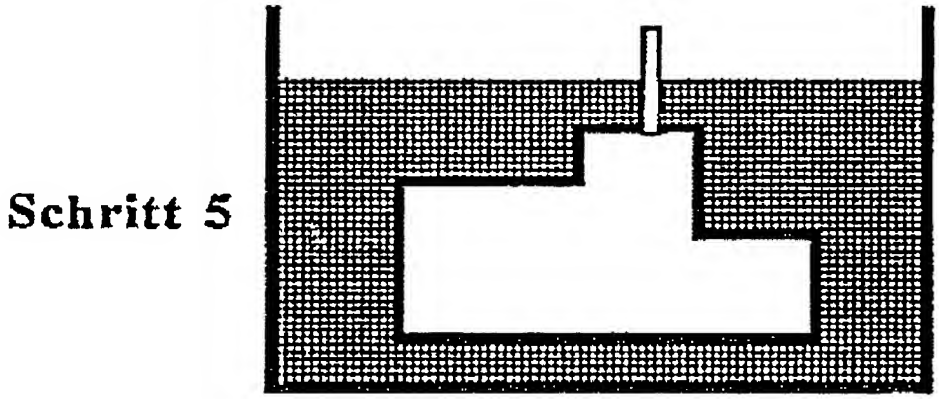
"A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. For at least these reasons, the rejections based on Greul should not be sustained.

Claim 8:

Claim 8 recites "depositing a sparse array support structure to support said boundary structure." In this regard, the Decision cites a metal powder used by Greul. According to the Decision, "we find that Greul discloses that the hollow mold (i.e., the boundary material

layer) may be embedded in a heavy metal powder before the filling procedure (Greul 7; Figure 1, Step 5). The heavy metal powder constitutes a deposited 'sparse' array support of the boundary layer in that the powder is not densely packed." (Decision, p. 9).

This subject matter is shown in step 5 of Greul's Fig. 1, which is reproduced below. As seen in this portion of the figure, the mold is entirely surrounded and supported by the metal powder.



Appellant respectfully submits that there is no reasonable way that the powder which *completely surrounds and supports* the mold can be referred to as a "*sparse* array support structure" as claimed. A "sparse" support structure is the complete antithesis of a support structure or material that completely surrounds the object supported. One of ordinary skill in the art would never equate the powder in which Gruel immerses the disclosed mold with the sparse array support structure of claim 8.

Therefore, Appellant believes that the Decision errs with respect to claim 8 by unreasonably construing the recited "sparse array support structure" to cover a bed of metal powder that completely surrounds and supports Gruel's mold. Claim terms are to be given their broadest *reasonable* interpretation during examination. However, the rejection of claim

8 requires an unreasonable interpretation in this instance. Consequently, the rejection of claim 8 should not be sustained.

In view of the foregoing, it is submitted that the remaining rejections of the final rejection in this application are improper and should not be sustained. Therefore, a complete reversal of the Final Rejection of December 20, 2005 is respectfully requested.

Respectfully submitted,

DATE: July 28, 2008

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Rebecca R. Schow